

SEQUENCE LISTING

<110> Falco, S. Carl
Cahoon, Rebecca E.
Rafalski, J. Antoni

<120> Vitamin B Metabolism Proteins

<130> BB-1201

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<150> 60/096,342

<151> August 12, 1998

<160> 16

<170> Microsoft Office 97

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<211> 933

<212> DNA

<213> Zea mays

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<212> PRT

<213> Zea mays

<400> 2

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Lys Ser Ala Val Phe Pro Leu Gln Leu Leu Gly Phe Asp Val Asp Pro
35 40 45

Ile Asn Ser Val Gln Phe Ser Asn His Thr Gly Tyr Pro Thr Phe Arg
50 55 60

200220 "T00E00T

Gly Gln Val Leu Asn Gly Lys Gln Leu Trp Asp Leu Ile Glu Gly Leu
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Glu Glu Asn Gln Leu Leu His Tyr Thr His Leu Leu Thr Gly Tyr Ile
85 90 95
Gly Ser Val Ser Phe Leu Asp Thr Val Leu Gln Val Val Glu Lys Leu
100 105 110
Arg Ser Val Asn Pro Asp Leu Val Tyr Val Cys Asp Pro Val Leu Gly
115 120 125
Asp Glu Gly Lys Leu Tyr Val Pro Gln Glu Val Ile Ser Val Tyr Gln
130 135 140
Gln Lys Val Val Pro Val Ala Ser Met Leu Thr Pro Asn Gln Phe Glu
145 150 155 160
Val Glu Leu Leu Thr Gly Leu Arg Ile Thr Ser Glu Glu Asp Gly Leu
165 170 175
Thr Ala Cys Asn Thr Leu His Ser Ala Gly Pro Gln Lys Val Val Ile
180 185 190
Thr Ser Ala Leu Ile Glu Gly Lys Leu Leu Leu Ile Gly Ser His Lys
195 200 205
Lys Thr Glu Glu Gln Gln Pro Gln Gln Phe Lys Ile Glu Ile Pro Lys
210 215 220
Ile Pro Ala Tyr Phe Thr Gly Thr Gly Asp Leu Thr Thr Ala Leu Leu
225 230 235 240
Leu Gly Trp Ser Asn Lys Tyr Pro Asp Ser Leu Glu Lys Ala Ala Glu
245 250 255
Leu Ala Val Ser Ser Leu Gln Ala Leu Leu Lys Arg Thr Val Glu Asp
260 265 270
Tyr Lys Met Ala Gly Phe Asp Pro Ser Thr Ser Ser Leu Glu Ile Arg
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35 40 45
Phe Lys Ile Glu Ile Pro Lys Ile Pro Ala Tyr Phe Thr Gly Thr Gly
50 55 60
Asp Leu Thr Thr Ala Leu Leu Leu Gly Trp Ser Asn Lys Tyr Pro Asp
65 70 75 80
Asn Leu Gly Glu Gly Ala Glu Leu Ala Val Ser Ile Cys Lys Ala Pro
85 90 95
Leu Arg Arg Thr Val Glu Asp Tyr Lys Arg Leu Gly Leu Thr Leu Gln
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<212> DNA
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200220" T0E2800T

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atccaattaa ttccgtgcag ttttcgaatc atacaggata tccgacgttt aagggtcagg 240
ttttgaatgg acagcaactc tgggatctaa tgaaggcct tgaaggaaat gatttattgt 300
tctatactca cttgctaaca gggtatattg gttcagagtc ttttctaaac actgtattgc 360
aagttgtcag caaacttcgg tcaacaaacc caggtctttc gtatgtatgt gatccagtga 420
tgggtgatga aggaaagctt tatgttcctc aagagctagt atcagtctat cgtgagaagg 480
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cttcaaaggn cataattaca agtataaata tagacgggat tcttctcctc attggcagtc 660
atccaaaaga aaagggagag ccnccngac aatttaagat tgttattcca aaaataacca 720
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Ser Ala Val Phe Pro Leu Gln Leu Leu Gly Tyr Asp Val Asp Pro Ile
35 40 45
Asn Ser Val Gln Phe Ser Asn His Thr Gly Tyr Pro Thr Phe Lys Gly
50 55 60
Gln Val Leu Asn Gly Gln Gln Leu Trp Asp Leu Ile Glu Gly Leu Glu
65 70 75 80
Gly Asn Asp Leu Leu Phe Tyr Thr His Leu Leu Thr Gly Tyr Ile Gly
85 90 95
Ser Glu Ser Phe Leu Asn Thr Val Leu Gln Val Val Ser Lys Leu Arg
100 105 110
Ser Thr Asn Pro Gly Leu Ser Tyr Val Cys Asp Pro Val Met Gly Asp
115 120 125
Glu Gly Lys Leu Tyr Val Pro Gln Glu Leu Val Ser Val Tyr Arg Glu
130 135 140
Lys Val Val Pro Val Ala Ser Met Leu Thr Pro Asn Gln Phe Glu Ala
145 150 155 160

Glu Leu Leu Thr Gly Phe Arg Ile Gln Ser Glu Gly His Gly Arg Glu
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Ala Xaa Arg Leu Leu His Ala Ala Gly Pro Ser Lys Xaa Ile Ile Thr
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Ser Ile Asn Ile
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<212> DNA
<213> Triticum aestivum

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Lys Ser Ala Val Phe Pro Leu Gln Leu Leu Gly Phe Asp Val Asp Pro
35 40 45
Ile Asn Ser Val Gln Phe Ser Asn His Thr Gly Tyr Pro Thr Phe Arg
50 55 60
Gly Ser Val Leu Asn Gly Lys Gln Leu Trp Glu Leu Ile Glu Gly Leu
65 70 75 80
Glu Glu Asn Gln Leu Leu His Tyr Thr His Leu Leu Thr Gly Tyr Ile
85 90 95
Gly Ser Val Ser Phe Leu Asp Thr Val Leu Gln Val Val Glu Lys Leu
100 105 110
Arg Ser Val Asn Pro Asp Leu Val Tyr Val Cys Asp Pro Val Leu Gly
115 120 125

Asp Glu Gly Lys Leu Tyr Val Pro Gln Glu Leu Ile Ser Val Tyr Gln
 130 135 140

Gln Lys Val Val Pro Val Ala Ser Met Leu Thr Pro Asn Gln Phe Glu
 145 150 155 160

Val Glu Leu Leu Thr Gly Leu Arg Ile Thr Ser Glu Glu Asp Gly Leu
 165 170 175

Thr Ala Cys Asn Thr Leu His Ser Ala Gly Pro Gln Lys Val Val Ile
 180 185 190

Thr Ser Ala Leu Ile Glu Gly Lys Leu Leu Leu Ile Gly Ser His Lys
 195 200 205

Lys Thr Glu Glu Gln Gln Pro Glu Gln Phe Lys Ile Glu Ile Pro Lys
 210 215 220

Ile Pro Ala Tyr Phe Thr Gly Thr Gly Asp Leu Thr Thr Ala Leu Leu
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 <212> DNA
 <213> Zea mays

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 tcctttaccc tgggcacatc aatgtgtgtg agaattggaa agctccatc tgttgaaatt 180
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 tttgagttct ggcaaggaca acagtctcga ctgcatgacc ggttacaata ctgcagaga 780
 gaagtagatg ggagcacagt gtggcacatc gagaggttgt ccccttga 828

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35 40 45
Cys Val Arg Ile Gly Lys Ala Pro Ser Val Glu Ile Ser Ser Leu Arg
50 55 60
Glu Asn Tyr Ile Ser Pro Glu Leu Leu Glu Ser Gln Val Met Ser Asp
65 70 75 80
Pro Phe Asp Gln Phe Leu Lys Trp Phe Asp Glu Ala Val Thr Ala Gly
85 90 95
Pro Gly Leu Arg Glu Pro Asn Ala Met Ala Leu Thr Thr Ala Asn Lys
100 105 110
Glu Gly Lys Pro Ser Ser Arg Met Val Leu Leu Lys Gly Val Asp Lys
115 120 125
Gln Gly Phe Val Trp Tyr Thr Asn Tyr Gly Ser Arg Lys Ala His Asp
130 135 140
Leu Cys Glu Asn Pro Asn Ala Ala Leu Leu Phe Tyr Trp Asn Glu Met
145 150 155 160
Asn Arg Gln Val Arg Val Glu Gly Ser Val Glu Lys Val Pro Glu Ala
165 170 175
Glu Ser Asp Lys Tyr Phe His Ser Arg Pro Arg Gly Ser Gln Leu Gly
180 185 190
Ala Ile Val Ser Lys Gln Ser Thr Val Ile Ala Gly Arg Glu Val Leu
195 200 205
Gln Gln Asp Tyr Lys Lys Leu Glu Gln Lys Tyr Ser Asp Gly Ser Leu
210 215 220
Ile Pro Lys Pro Glu Tyr Trp Gly Gly Tyr Lys Leu Thr Pro Thr Leu
225 230 235 240
Phe Glu Phe Trp Gln Gly Gln Gln Ser Arg Leu His Asp Arg Leu Gln
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Tyr Ser Gln Arg Glu Val Asp Gly Ser Thr Val Trp His Ile Glu Arg
260 265 270
Leu Ser Pro
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<210> 11
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<212> DNA
<213> Oryza sativa

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 ccatatcccg gtacctcaat gtgtgtgaga attgaaaaag ctccatctgt tgacatttca 180
 tctctaagaa gaaattacat ctccccctgaa cttctcgagn aacaggtgat gcctgatcca 240
 tttgataant tcgtttagatg gtttgatgaa ctgttacgct ggctacgtga accaaatgct 300
 atgggtaaca actccgataa ggagggaaaa ctccgcaaag aatggccttt aangnggttg 360
 ataaccacgg attttttggg ancaattntg ganccaaaag gacatgatta cctgaaacca 420
 aatgcngccn gttncantgg aaggaataac ggcagtaaaa taaagtctgt canangtcca 480
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 ctganggant ncagg 555

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 <212> PRT
 <213> Oryza sativa

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 <222> (74)

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35 40 45

Val Arg Ile Gly Lys Ala Pro Ser Val Asp Ile Ser Ser Leu Arg Arg
50 55 60

Asn Tyr Ile Ser Pro Glu Leu Leu Glu Xaa Gln Val Met Pro Asp Pro
65 70 75 80

Phe Asp Xaa Phe Val Arg Trp Phe Asp Glu Leu Leu Arg Trp Leu Arg
85 90 95

Glu Pro Asn Ala Met Val Asn Asn Ser Asp Lys Glu Gly Lys
100 105 110

<210> 13
<211> 864
<212> DNA
<213> Glycine max

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tccatgtgtg ttcgaattgg aaggcctcca cgtattgata tctcagctct aagagagaac 240
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<213> Glycine max

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20 25 30

Pro His His Phe Leu Gly Gly Arg Phe Val Pro Pro Ala Ile Ala Glu
35 40 45

Lys Tyr Lys Leu Ile Leu Pro Pro Tyr Pro Gly Thr Ser Met Cys Val
50 55 60

Arg Ile Gly Arg Pro Pro Arg Ile Asp Ile Ser Ala Leu Arg Glu Asn
65 70 75 80

Tyr Ile Ser Pro Glu Phe Leu Glu Glu Gln Val Glu Ala Asp Pro Phe
85 90 95

Asn Gln Phe His Lys Trp Phe Asn Asp Ala Leu Ala Ala Gly Leu Lys
100 105 110

Glu Pro Asn Ala Met Ser Leu Ser Thr Val Gly Lys Asp Gly Lys Pro
115 120 125

Ser Ser Arg Met Val Leu Leu Lys Gly Leu Asp Lys Glu Gly Phe Val
130 135 140

Trp Tyr Thr Asn Tyr Glu Ser Arg Lys Ala Arg Glu Leu Ser Glu Asn
145 150 155 160

Pro Arg Ala Ser Leu Leu Phe Tyr Trp Asp Gly Leu Asn Arg Gln Val
165 170 175

Arg Val Glu Gly Pro Val Gln Lys Val Ser Asp Glu Glu Ser Glu Gln
180 185 190

Tyr Phe His Ser Arg Pro Arg Gly Ser Gln Ile Gly Ala Ile Val Ser
195 200 205

Lys Gln Ser Thr Val Val Pro Gly Arg His Val Leu Tyr Gln Glu Tyr
210 215 220

Lys Glu Leu Glu Glu Lys Tyr Ser Asp Gly Ser Leu Ile Pro Lys Pro
225 230 235 240

Lys Asn Trp Gly Gly Tyr Arg Leu Thr Pro Gln Leu Phe Glu Phe Trp
245 250 255

Gln Gly Gln Lys Ser Arg Leu His Asp Arg Leu Gln Tyr Thr Pro His
260 265 270

Glu Ile Asn Gly Gln Arg Leu Trp Lys Val Asp Arg Leu Ala Pro
275 280 285

<210> 15
<211> 456
<212> DNA
<213> Triticum aestivum

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agagtagaag ggtcgggttca gaaggtctca gaagaagaat ctgagaagta tttccacagc 180
cgcccacgtg gaagtcagct tggtgcaatt gtttagcaagc agagcactgt catttcttga 240
agagaagttc tccaacaagc gtacaaggaa ttggagcaaa aatattctga cggtagcttc 300
atcccaaaaac ccgattactg ggggtggctac aagttgacac caaatctttt tgagttctgg 360
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agtacagaat ggcacatcca aaggttgtcc ccttga 456

<210> 16
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<212> PRT
<213> Triticum aestivum

<400> 16
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 35 40 45
 Val Ser Glu Glu Glu Ser Glu Lys Tyr Phe His Ser Arg Pro Arg Gly
 50 55 60
 Ser Gln Leu Gly Ala Ile Val Ser Lys Gln Ser Thr Val Ile Ser Arg
 65 70 75 80
 Glu Val Leu Gln Gln Ala Tyr Lys Glu Leu Glu Gln Lys Tyr Ser Asp
 85 90 95
 Gly Ser Phe Ile Pro Lys Pro Asp Tyr Trp Gly Gly Tyr Lys Leu Thr
 100 105 110
 Pro Asn Leu Phe Glu Phe Trp Gln Gly Gln Gln Ser Arg Leu His Asp
 115 120 125
 Arg Leu Gln Tyr Ser Gln Arg Glu Leu Gly Gly Ser Thr Glu Trp His
 130 135 140
 Ile Gln Arg Leu Ser Pro
 145 150